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COMPLETE SPECIFICATION

Method and Apparatus for the Treatment of Dust-laden Air

We, FARBENFABRIKEN BAYER AKTIENGESELLSCHAFT, a Body Corporate organised under the Laws of Germany, of Leverkusen-Bayerwerk, Germany, and TITANGESELLSCHAFT M.b.H., a Body Corporate organised under the Laws of Germany, of Leverkusen-Bayerwerk, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to the prevention of deposition of dust particles from a dust-laden gas stream during passage of the said dust-laden gas stream into dust collecting apparatus, such as sifting devices, apparatus wherein material to be dried is carried by an air stream, and pipe bends.

It is known to fit immobile guide vanes in passages to secure controlled, e.g., laminar, flow of a dust-laden gas through the passages, these vanes being disposed substantially longitudinally of the passages. During operation, however, dust is continuously deposited on guide vanes of this type, so that the passages become clogged and the gas streams turbulent.

The known dust collectors which are equipped with guide vanes in the inlet gas passages are effective in collecting and removing dust from the gas passing into the apparatus only so long as the air or gas passages do not become clogged and thus prevent the proper working of the apparatus. In these dust collectors, dust tends to deposit on, and adhere to, the surfaces of the guide vanes, especially when the air or gas stream contains dust which is sticky or of very small particle size. Attempts have been made to prevent dust from adhering to the surface of the guide vanes by polishing or chrome plating the surfaces. It has been found, however, that the polish or chrome coating on the surfaces of the guide vanes is

destroyed within a short time by the abrasive action of the dust.

An object of the invention is to provide a method of preventing the premature deposition of dust particles from a dust-laden gas stream during passage thereof into dust collecting apparatus, which deposition would obstruct the free passage of the gas and reduce the effectiveness of the apparatus. Another object of the invention is to provide a method of, and means for, preventing the clogging with dust of the passages through which gas streams carrying dust are introduced into dust collecting apparatus.

The objects of the invention are accomplished by installing in the passage leading to the above described dust collecting apparatus (through which passage gas streams carrying dust are introduced into the apparatus), guide vanes made of flexible material, the said guide vanes being arranged substantially longitudinally of the passages in such a manner that they vibrate or flutter under the influence of the dust-laden gas stream so as to prevent the dust from separating from the gas stream prematurely or to ensure that any smaller deposits of dust are instantly removed. It is not absolutely necessary according to the invention to use guide vanes which are made entirely of flexible material, as it suffices in most cases to make the reeds or the ends of these vanes of flexible material so that deposition of dust particles is prevented by the vibrating or fluttering action of the reeds or ends under the influence of the dust-laden gas stream. Furthermore, it is possible to attach to the guide vanes, flaps (or other appropriate means of flexible material) which are moved by the dust-laden gas stream passing along them. Suitable flexible materials for the purpose of the invention are, for instance, rubber and plastics. The motion of the guide vanes, their ends or flaps attached thereto, taking place under the influence of the gas passing

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along the vanes made of flexible material, produces additional stresses and strains which cause thin layers of dust particles deposited on these guide vanes to fly or pop off therefrom at the instant they are being deposited thereon.

The guide vanes as herein described do not therefore require the cleaning operations necessary with the various types of mechanical dust collectors now in use.

The invention is further illustrated by way of examples in the accompanying drawing in which:—

Fig. 1 is a diagram illustrating part of the inlet pipe of a dust collecting apparatus; while

Figs. 2 and 3 show details of a guide vane.

As shown in Fig. 1, a bent pipe 1 has arranged in it guide vanes 2 attached by fixing means 3. Reference numerals 4 denote the ends of the guide vanes 2. A gas stream carrying dust passes through the pipe 1 in the direction of the arrow and causes the guide vanes 2 to vibrate or flutter, thereby preventing dust particles from adhering to the guide vanes. The floating motion of the guide vanes 2 is indicated by the dotted lines 5 and 6.

Figs. 2 and 3 show a guide vane 7 the pointed end 8 of which is of flexible material.

What we claim is:—

1. A method of preventing the deposition of dust particles from a dust-laden gas stream during its passage into dust collecting apparatus, which comprises arranging in the inlet passages of the dust-collecting apparatus guide vanes of flexible material, said

guide vanes being so arranged substantially longitudinally of the passages that they are caused to vibrate under the influence of said dust-laden gas stream.

2. A method as claimed in Claim 1, wherein the guide vanes of flexible material are arranged in such a manner that the ends of said guide vanes are caused to vibrate under the influence of said dust-laden gas stream.

3. A method as claimed in Claim 1 wherein said guide vanes are provided with flaps of flexible material in such a manner that said flaps are caused to vibrate under the influence of said dust-laden gas stream.

4. Means for introducing a dust-laden gas stream into a dust collecting apparatus, comprising a passage and, disposed in and substantially longitudinally of said passage, guide vanes which are wholly or partly of flexible material and are so arranged that they will vibrate under the influence of the said gas stream.

5. A method of dust collection substantially as described with reference to Fig. 1 or to Figs. 2 and 3 of the accompanying drawings.

6. Means as claimed in Claim 4, substantially as described with reference to Fig. 1 or to Figs. 2 and 3 of the accompanying drawings.

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